

1 This was a machining facility, a large machining
2 facility. And they had a concern about machining
3 fluids that they were using in their processing and
4 microbial contaminants, and I spent one day with
5 them, consulting on their concerns.

6 Wausau Insurance, Downers Grove, Illinois,
7 1999. This was a worker injury case or consultation,
8 rather, and I evaluated the toxic properties of the
9 compounds in question.

10 We've addressed the next entry already. D.
11 David Altman Company.

12 2000, Shuttleworth & Ingersoll, P.C., Cedar
13 Rapids.

14 (Pause.)

15 I'm pausing to try to recollect what the
16 issue was there. Oh, yes, I remember. This was a
17 case of a furniture sales store that did some
18 refinishing of wood, and there was a worker with a
19 health concern regarding that.

20 2002, United States Department of Justice
21 and US EPA Air Enforcement Division. This had to do
22 with my laboratory and me performing some analyses of
23 samples taken from large poultry confinement
24 facilities -- or taken in the vicinity of poultry
25 confinement facilities, and these were analyzed for

1 the airborne microorganisms in their products.

2 2003, Sullivan & Ward, Des Moines, Iowa, is
3 the case that we described, Sherlock Homes versus
4 Margaret Nims.

5 2005, White & Johnson, P.C., concerned an
6 indoor air problem and a dispute between the heating,
7 ventilating and air conditioning company that
8 installed the ventilation system and the homeowners.
9 And that's the complete list.

10 **Q. Doctor, it seems to me, from hearing your**
11 **description of that list and from looking at the**
12 **publications on your Curriculum Vitae, that a great**
13 **deal of your work has been focused on airborne**
14 **exposures and in some cases contact exposures; is**
15 **that correct?**

16 A. My published work, much of it is, indeed,
17 focused on pulmonary or immunotoxicology. However, I
18 teach toxicology at the undergraduate and graduate
19 level, and I teach general environmental health, and
20 I teach environmental epidemiology, a variety of
21 subjects. So I have expertise that is represented
22 more in my teaching that is broader than what is
23 represented in the particular areas where I am
24 currently actively doing research. Within my
25 published record, I have also looked at pesticide

1 degradation and issues of the way toxic materials
2 behave in the environment.

3 Q. Holding aside what you may teach, I want to
4 focus on your research and on your professional
5 consulting services. Is it fair to say that the vast
6 majority of that has dealt with airborne exposures or
7 contact exposures?

8 MR. ALTMAN: I'll object.

9 Go ahead, Dr. Thorne.

10 A. Looking simply at my publication record,
11 which reflects my research, it spans an array of
12 areas, and the unifying feature is that it has to do
13 with toxic agents in the environment and the way that
14 they induce adverse health effects. I think, put
15 that way, that encompasses the vast majority of the
16 work that I've done.

17 Q. With all due respect, I'm not sure that
18 that actually answers my question, so perhaps I'll
19 put it this way instead.

20 MR. ALTMAN: Objection.

21 Q. Have you --

22 MR. ALTMAN: Objection.

23 Go ahead.

24 Q. Have you published on the subject of
25 exposure to toxic substances through groundwater?

1 A. I have published on the toxic property of
2 substances that can move through groundwater. Is
3 that your question?

4 **Q. It is not.**

5 A. Okay.

6 **Q. Have you published on -- have you published**
7 **on the exposure to substances that, in the context of**
8 **what you were publishing on, were transported through**
9 **groundwater?**

10 MR. ALTMAN: Objection.

11 A. I'm going to look through the papers that
12 are listed and the abstracts and make sure that I
13 answer your question as best I can. There's --
14 recognizing that it covers more than 20 years and
15 more than 200 published abstracts, papers and book
16 chapters.

17 (Pause.)

18 MR. ALTMAN: Marcel, I want to make
19 clear my objection is to the form. I don't
20 understand that question, but if the witness does, he
21 should certainly answer it.

22 MR. DUHAMEL: The witness didn't seem
23 to have any problem understanding the objection --
24 or, rather, the question.

25 MR. ALTMAN: I think the witness

1 already answered your question, and I have a problem
2 with the form of your -- also of your next question
3 that you now have, and so I've objected to form. But
4 if the witness does understand what you're saying, he
5 should answer.

6 A. (Pause.)

7 Looking at my record of publications as
8 reflected in Exhibit 2, I see that I have published
9 several papers that cover or consider issues of
10 substances that can move in water. This would
11 include metalworking fluids and their components. It
12 would include arsenic. It would include several
13 other metals, and it would include some pesticides.

14 Q. It appears to me that perhaps we are having
15 a little difficulty communicating, so let me try to
16 narrow the focus of my question. Okay, Doctor?

17 A. Please do.

18 Q. Holding aside your studies of materials
19 that can move through water, have you ever published
20 on the subject of the toxicological properties of
21 substances to which individuals were exposed through
22 contaminated groundwater?

23 A. Yes.

24 MR. ALTMAN: Objection as to the form.
25 Objection as to the form.

1 Go ahead.

2 A. Yes.

3 Q. And could you identify those publications
4 for me?

5 A. The publication listed as No. 102.

6 Q. And that is, just to be sure we're correct,
7 Beane Freeman LE, Dennis LK, Lynch CF, Thorne PS,
8 Just CL, Toenail arsenic content and cutaneous
9 melanoma in Iowa?

10 A. Cutaneous, yes.

11 Q. Thank you.

12 And that's correct?

13 A. That's correct.

14 Q. That's the publication to which you were
15 referring?

16 A. Yes.

17 Q. Any others?

18 MR. ALTMAN: Objection to form.

19 A. As I understand the question, it's
20 exceedingly narrow.

21 Q. That is correct. It's a very narrow
22 question, Doctor.

23 THE WITNESS: Can you repeat the
24 question for me?

25 A. Am I allowed to ask the court reporter to

1 repeat the question? I guess I should ask you,
2 Mr. Duhamel.

3 **Q. That's fine.**

4 MR. DUHAMEL: I'll ask the court
5 reporter to -- I'll ask the court reporter to read
6 the question back.

7 (The reporter read the requested
8 portion of the record.)

9 MR. ALTMAN: I continue to object.
10 Go ahead.

11 A. I can think of one additional study that
12 considered, among many other exposures, exposures to
13 contaminated water, and that would be No. 43 on
14 Page 13.

15 **Q. Just to try to make sure our list is**
16 **complete, any others that you can recall?**

17 A. So you're not interested in studies of
18 materials to which people are exposed to groundwater,
19 but that were conducted in a laboratory? You're
20 excluding those, correct?

21 **Q. Not intentionally.**

22 A. Okay. I can point to publication No. 11 on
23 Page 12, which is Lightfoot EN, et al., Laboratory
24 studies on mechanisms for the degradation of
25 aldicarb, aldicarb sulfoxide and aldicarb sulfone,

1 1987.

2 Similarly to that would be No. 32 on
3 Page 13, Subramanian, Teesch, Thorne, Degradation of
4 3.5-dimethyl-tetrahydro-2H-1,3,5-thiadiazine-2-thione
5 in aqueous aerobic media.

6 **Q. Let me ask, what is aqueous aerobic media?**

7 A. That means water-based solutions that have
8 oxygenation or air, and it makes a difference in
9 terms of degradation of compounds.

10 Also, there are studies in the waste
11 handling industry where people are exposed to
12 potentially infectious agents via ingestion. So
13 although that's not groundwater, it's through
14 ingestion of food and water, and, hence, it's not
15 respiratory and it's not percutaneous absorption,
16 which was part of your initial question.

17 **Q. That's correct. Could you identify those**
18 **for me?**

19 A. There is a paper, No. 66, on Page 15,
20 Mahar, Reynolds, Thorne, and it's entitled Worker
21 exposures to particulates, endotoxins and bioaerosols
22 in two refuse-derived fuel plants. The title doesn't
23 necessarily reflect this, but we did look at
24 gastrointestinal illness among these particular
25 workers.

1 Then there's a paper now published that is
2 listed on Page 18, and it's No. 6 at the top of the
3 page, and at the time of this, it was a submitted
4 paper. It is now published. And that is Lee,
5 Johnson, Reynolds, Thorne, O'Shaughnessy, entitled
6 Indoor and outdoor air quality assessment of four
7 wastewater treatment plants. And in that there's
8 also ascertainment of gastrointestinal illness as
9 part of the evaluation.

10 As I glance at the list of these
11 publications, those are the ones that come to mind as
12 examples. There may be aspects of some of the other
13 papers as well. For instance, there's also No. 94 on
14 Page 16 that considered women serving in the Gulf
15 War, the first Gulf War -- well, the first U.S. Gulf
16 War and their combat experience exposures and
17 utilization of health care, so that would also
18 consider the water that they ingested.

19 **Q. Could you look at Page 51 and 52 of**
20 **Exhibit 2 and do the same thing you just did with**
21 **respect to professional consulting and serving as**
22 **expert witness?**

23 A. Can you clarify what you mean by what I
24 just did? I want to make sure I understand you.

25 **Q. Sure.**

1 Could you identify -- that's fine.

2 Could you identify any of those engagements
3 which involved potential exposure to a substance
4 through either ingestion of or contact with
5 contaminated water?

6 MR. ALTMAN: Objection to the form.
7 Marcel, you have now changed it to potential
8 exposure, and that was not part of your first
9 question. I don't know whether that was intentional
10 or not.

11 A. So you're asking for potential exposure to
12 contaminated water, and any contaminant?

13 Q. Correct, for this list that we're looking
14 at on Page 51 to 52, yes, where you actually
15 considered the effects of potential exposure or
16 actual exposure.

17 A. So 1982 --

18 MR. ALTMAN: I want the record to
19 reflect that that is not the same question that was
20 asked on the earlier list.

21 MR. DUHAMEL: I think the record will
22 reflect whatever it reflects.

23 A. 1982, Union Carbide, that would -- that did
24 consider potential exposures to substances in the
25 water.

1 Kikkoman Foods also -- in this case it was
2 processed water used for manufacturing soy sauce.

3 1983 to '87, Union Carbide, same as what I
4 just -- as the previous Union Carbide that was
5 considering contaminants in water.

6 1988, Duquesne Light Nuclear Group. This
7 was contaminants in water in the cooler condensing
8 units in the ventilation system, but they were
9 waterborne contaminants.

10 S.C. Johnson & Sons. These were
11 contaminants in products that you use in the shower,
12 in some cases, so those would be water, but they
13 were -- exposure to those would mostly be by dermal
14 absorption; although, one can have some ingestion,
15 potentially.

16 Castrol Industrial of North America.
17 Metalworking fluids can be contaminants of water and
18 their products and their process oftentimes in
19 municipal wastewater treatment system which may not
20 adequately remove the contaminants from the water.

21 **Q. If I could interrupt you briefly.**
22 **Specifically, what were you looking at in the**
23 **engagement involving Castrol Industrial of North**
24 **America?**

25 **A.** I was -- the nature of that consultation

1 had to do with the formulation of machining fluids.
2 And the formulation includes what chemicals are put
3 into them in their initial formulation as well as
4 additives that are recommended. It also deals with
5 compounds that arise in the use of those metalworking
6 fluids in industrial processes and then the
7 ramifications of the waste treatment and recovery of
8 those machining fluids, because they're very
9 expensive. And oftentimes it is not allowed to have
10 certain contaminants or certain compounds included in
11 those put into the municipal sewer system. I think
12 if I were to go any further than that, it would get
13 into trade secrets with regard to their formulary,
14 and so I can't do that.

15 **Q. All right. And that's it on the list, the**
16 **ones you've already identified?**

17 **A. Yes.**

18 **Q. I interrupted you while we were talking**
19 **about Castrol, and I wanted to make sure there was**
20 **nothing subsequent to that.**

21 **A. Well, the list, 1998, Hoogovens, Ijmuiden,**
22 **that was also machining fluids used in metal**
23 **processing, so those have the potential to lead to**
24 **ingestion exposure from water systems.**

25 **Q. Were you specifically studying that**

1 **potential exposure and its effects with respect to**
2 **that particular engagement?**

3 MR. ALTMAN: Objection.

4 A. When a company has a problem with a
5 material in a process, oftentimes one doesn't simply
6 look at one small aspect of the problem. So I was
7 looking at a host of questions that they had
8 regarding these materials, their toxic properties and
9 how they could deal with cleaning them, reprocessing
10 them, reusing them and disposing of them. So it was
11 an element of the overall consultation. It wasn't
12 the sole aspect of the consultation.

13 **Q. Doctor, let's turn to Exhibit 1. When were**
14 **you first asked to prepare an expert report in this**
15 **case?**

16 A. It was early in the fall of 2005.

17 **Q. What specifically were you asked to express**
18 **an opinion on?**

19 A. I was asked to consider the toxicants that
20 were at the Carlisle facility or emanating from the
21 Carlisle facility and provide information on their
22 toxicologic properties.

23 **Q. Were you asked to do anything else?**

24 MR. ALTMAN: Objection to form.

25 A. I was also asked to identify and define

1 what sorts of criteria are used for establishing the
2 hazardous nature of compounds, for instance,
3 carcinogens. And so I provided the group listings
4 from the National Toxicology Program and from the
5 International Agency for Research on Cancer and the
6 criteria that they use.

7 In addition, I provided some information,
8 where appropriate, on the degradation products that
9 arise from some of the toxicants that I was
10 expressing -- providing information about as to their
11 toxicity. I also provided some information regarding
12 the hazards associated with exposures to mixtures
13 rather than individual compounds one at a time,
14 because, as I expressed earlier, that's really very
15 much of an artificial scenario that one might be
16 exposed to a compound one at a time, and so I
17 commented on the toxicity of mixtures as well.

18 **Q. Were you asked to do anything else?**

19 **A.** That's all I recall being asked to do.

20 **Q. We're going to take a momentary break.**

21 **We've been going for about 90 minutes. We'll**
22 **reconvene in two or three minutes, if that's okay.**

23 **A.** It's fine with me.

24 **MR. DUHAMEL:** Very good. We're off the
25 record.

1 (A recess was held at 10:31 a.m., and
2 proceedings resumed at 10:37 a.m.)

3 MR. DUHAMEL: Let us go back on the
4 record, please.

5 Q. (BY MR. DUHAMEL) Doctor, I want to make
6 sure that I understand the substance of your expert
7 report, so I'm going to ask a few specific questions
8 about what's contained in it.

9 A. Very good.

10 Q. Does your expert report express any opinion
11 as to whether any person has, in fact, been exposed
12 to any toxic substance from the plant located at
13 Carlisle Engineered Products facility?

14 A. As we discussed before the break, my role
15 in this and what I provided an expert opinion on was
16 the nature of the toxic properties of those
17 compounds. And it's my understanding that there are
18 other experts that were retained to provide
19 information on hydro-geology and on pathways and
20 transport from the facility. And that would be
21 Bruce -- Dr. Bruce Bell and Dr. Julie Wetherington-
22 Rice, so that was not what I was asked to provide an
23 opinion on.

24 Q. So just to be clear, your report does not
25 express any opinion on that subject?

1 A. I did not evaluate the transport or the
2 fate of compounds from Carlisle, and so that's not a
3 part of my report.

4 **Q. Okay. Does your report express an opinion**
5 **as to whether or not conditions at the Carlisle**
6 **Engineered Products facility in Middlefield, Ohio,**
7 **constitute or may constitute an emanate and**
8 **substantial endangerment to human health or the**
9 **environment?**

10 A. The array of compounds that are associated
11 with the facility and their toxicity and the notion
12 that there's the potential for multiple contact with
13 multiple agents is -- the full array of compounds is
14 such that it is of a concern to me that there are
15 unknown or unstudied compounds as to their presence
16 on the facility or their movement from the facility.
17 So, although I haven't looked specifically or
18 addressed in my report specifically the pathways, I
19 expressed the concern that given the array of
20 compounds that are there and their toxic nature, that
21 it is potential to pose imminent substantial
22 endangerment.

23 **Q. Can you show me in your report where you**
24 **reach that particular conclusion?**

25 A. I believe I said that I didn't specifically

1 put that in my report. But what I did just state is
2 that, as I look at the list and I consider their
3 toxic effects, there's an array of very toxic to
4 potentially -- or moderately to very toxic compounds
5 present at this site. And I'm concerned that these
6 compounds and their fate has not been apparently
7 addressed in terms of considering the potential to
8 cause harm to the public health.

9 Q. I'm going to try again, because I think
10 maybe we're misunderstanding each other, Doctor.

11 Just to be completely clear, I'm not asking
12 you at all about what your current concerns or
13 opinions may be. What I'm asking you is specifically
14 about what opinions you actually expressed in your
15 report.

16 So my question again is, does your report
17 express any opinion on that subject?

18 A. I could point you to Page 9 at the bottom,
19 Comment on the Toxicity of Mixtures. "The toxic
20 profiles of the above compounds represent a synopsis
21 of their effects when exposure occurs individually.
22 Because of the nature of the chemicals discussed
23 herein, it is likely that additive and synergistic
24 effects would occur with combined exposures to these
25 and other chemicals released from the Carlisle

1 facility. Further, exposures to the chemicals herein
2 occurring via multiple routes (i.e., inhalation,
3 ingestion, dermal) would likely lead to greater
4 toxicity than by one route of exposure for one or
5 multiple compounds." So that would be the place
6 where I'm referring to this issue of exposure to
7 multiple compounds which may have additive or
8 synergistic effects.

9 Q. I understand.

10 Does the -- let me put it this way. Does
11 the phrase "imminent and substantial endangerment"
12 appear anywhere in your report?

13 A. No.

14 Q. In Item D where you include Comment on the
15 Toxicity of Mixtures, do you express anywhere in your
16 report any opinion as to the likelihood of actual
17 exposure to -- let me start again.

18 Does your report in any way express an
19 opinion as to how likely it is that any person will
20 be exposed to contaminated groundwater around the
21 Carlisle Engineered Products facility?

22 MR. ALTMAN: Objection.

23 A. No. My report stands as it is. And as I
24 pointed out before, there were other experts,
25 Dr. Bell and Dr. Wetherington-Rice, that I understood

1 offered opinions as to those points that you raise.

2 Q. But your report doesn't raise or does not
3 offer an opinion on that subject?

4 A. On the subject of transport from the site,
5 no.

6 Q. And on the subject of exposure by any
7 individual or group of individuals?

8 MR. ALTMAN: Objection. That's been
9 asked and answered.

10 MR. DUHAMEL: You know what? It has.
11 I'll withdraw the question.

12 Q. (BY MR. DUHAMEL) Doctor, have you been
13 asked to provide a supplemental expert report?

14 A. No, I have not.

15 Q. Did Mr. Altman or any attorney at
16 Mr. Altman's firm send you a written engagement
17 letter?

18 A. Can you clarify what you mean by "a written
19 engagement letter"? That's not a term that is
20 familiar to me.

21 Q. All right. Let's put it this way. When
22 you were first asked to serve as an expert in this
23 case, were you asked orally or in writing?

24 A. Orally.

25 Q. Did Mr. Altman or any attorney in his firm

1 ever send you a letter, indicating what they had
2 asked you to provide an expert opinion on?

3 A. That was done orally.

4 Q. Did Mr. Altman or anyone in his firm ever
5 ask you if you could provide an opinion on the
6 subject of imminent and substantial endangerment?

7 A. You mean as a part of the report?

8 Q. Yes, sir.

9 A. No.

10 Q. Okay. Can we just turn to Page 2 of your
11 report, the substitute page?

12 A. (Witness complied.)

13 Q. Looking at the very first substance that
14 you address, trichloroethylene, do you see that?

15 A. Yes.

16 Q. There is a reference to the EPA having
17 established an MCL in drinking water. Do you see
18 that?

19 A. Yes.

20 Q. What's an MCL?

21 A. It's a maximum contaminant level.

22 Q. Do you know what the purpose of an MCL is?

23 A. Yes. An MCL provides a benchmark by which
24 we judge when there's excessive contamination of the
25 medium, the water, from the standpoint of what's safe

1 for the public.

2 Q. Do you know if the EPA has ever determined
3 that exposure to trichloroethylene in drinking water
4 in an amount greater than five parts per billion is
5 actually unsafe?

6 A. The establishment of health-based standards
7 consider an array of aspects of a risk assessment
8 process. They consider the toxicity of the compound.
9 In some cases, they consider other potential
10 compounds that might be -- one might face exposure
11 along with that compound. They use animal data,
12 human data. They draw from an array of sources of
13 information to determine a level that would provide
14 an ample protection of the public for the particular
15 substance that is being -- for which the MCL is being
16 established.

17 Q. Would you agree with me that that does not
18 necessarily mean that the EPA has determined that an
19 actual exposure at, say, six parts per billion is, in
20 fact, unsafe, but merely that, instead --

21 MR. ALTMAN: Objection.

22 Q. -- instead, as a matter of policy, the EPA
23 will set screening limits of five parts per billion?

24 MR. ALTMAN: Objection as to form and
25 substance.

1 A. Standard setting is a process of evaluating
2 the risks of a particular compound or suite of
3 compounds and trying to identify a reasonable level
4 that will protect the public, and when you're talking
5 about protecting the public, it means the majority of
6 the public. And so one has to recognize that there
7 might be individuals within the public who are more
8 susceptible by virtue of genetics, age, gender, other
9 exposures that they have concurrently, personal
10 lifestyle factors and the like. And so these
11 standards provide that consideration, to provide an
12 overall measure of public health protection. So
13 these don't derive solely from a dose response type
14 of argument in a selected subgroup of the population.

15 **Q. Your next sentence, "The NTP has stated**
16 **that trichloroethylene is Group 2A, reasonably**
17 **anticipated to be a human carcinogen," do you see**
18 **that?**

19 A. Yes.

20 **Q. Is there a specific dose over a specific**
21 **period of time at which the NTP has made that**
22 **determination?**

23 A. Generally, when the NTP or IARC, the
24 International Agency for Research on Cancer, makes a
25 determination as to which category or group of

1 carcinogenicity they put a compound into, they
2 consider a weight of evidence of all of the data that
3 are available, deriving from occupational health
4 studies, epidemiologic studies, community health
5 studies, animal studies, in some cases, cell culture
6 or mechanistic laboratory studies, and so they look
7 at all of that information and make a determination
8 as to whether the compound is a Group 1, a 2A, a 2B
9 and so forth.

10 Q. Respectfully, I don't think that answered
11 my question.

12 When the NTP determines that a substance is
13 reasonably anticipated to be a human carcinogen, is
14 the NTP expressing a statement about what level of
15 exposure to that substance is likely to result in the
16 development of cancer in human populations?

17 MR. ALTMAN: Objection.

18 A. The NTP publishes a list of agents that
19 they have evaluated and as to their grouping, so
20 those that are known to be a human carcinogen or
21 reasonably anticipated to be carcinogenic become
22 listed compounds. And when they are listed
23 compounds, then they have that designation, and it
24 is not -- a level for that is not set in the list.
25 That's their process.

1 Q. Understand.

2 Do you express anywhere in your report
3 any opinion as to what level of exposure to
4 trichloroethylene is likely to result in the
5 development of cancer in a human population?

6 MR. ALTMAN: Objection.

7 A. I have not done so, because these
8 compounds, typically one is not exposed to them one
9 at a time. Rather, it's as a mixture. And,
10 furthermore, it's not a one size fits all in terms of
11 the individual that is being exposed. As I've stated
12 several times, there are susceptibility factors which
13 then determine, in effect, the toxicity of these
14 compounds or the effects that they're going to exert
15 on an individual. So given the array of compounds
16 that we're considering, it's -- I don't feel that
17 it's particularly meaningful to look at an individual
18 compound and say something about, if you will, a dose
19 response for that individual compound.

20 Q. All right. Well, let's try it, then, with
21 the entire array of compounds which, if I understand
22 correctly, you address as a mixture only in Item D on
23 Page 9 of your report; is that correct?

24 A. No.

25 MR. ALTMAN: Objection.

1 THE WITNESS: Sorry.

2 Q. (BY MR. DUHAMEL) Where else do you express
3 an opinion on the effect of these items as a mixture?

4 A. What I was about to say before the
5 objection, throughout here, there is a consideration
6 of mixtures that in many cases there are statements
7 as the environmental degradation products of the
8 particular compound that's being described. And,
9 hence, if there's degradation from the parent
10 compound to first one intermediate then another, then
11 another, clearly there would be exposure to that
12 suite of compounds in the environment, and so those
13 statements appear throughout the report.

14 Q. Let's try it this way. Does your report
15 address -- I'm sorry. Does your report express any
16 opinion on the dose or amount of exposure to the
17 suite of substances you address that would be likely
18 to result in harm to human health?

19 A. I'm sorry. Can you restate or rephrase the
20 question for me, because I don't understand the
21 question?

22 Q. All right. Taking the entire suite of
23 exposure -- of substances --

24 A. So by that, you mean all 23 compounds that
25 I've rendered information on?